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Remarks

By the above rewritten claims applicants have defined the invention more particularly and distinctly so as to overcome the technical rejections and define the invention patentably over the prior art.

The Rejection Of Claim 1 And Claim 3 As Being Anticipated By Berndt Is Overcome.

The Office Action states that claims 1 and 3 are rejected as being anticipated by Berndt.

"Berndt shows an aerosol splitting device comprising a nebulizer 30, an non-linear spray chamber including sections 76, 82 and 88, a drain 80 in the spray chamber and means for controlling heating and cooling of the spray chamber, wherein the spray chamber is a tube with a curved section, wherein the heating and cooling is provided by a peltier device."

Different Features:

Independent Claim 1 has been rewritten as Independent Claim 5, and dependent Claim 3 has been rewritten as dependent Claim 7. The rewritten claims emphasize novel features not taught by Berndt.

As can be learned from the patent of Berndt, Berndt teaches a linear spray chamber, and further, the spray chamber does not have temperature control. The office action incorrectly identifies the spray chamber of Berndt as being comprised of parts 76, 82, and 88. However, Berndt specifically identifies a spray chamber 76, part 82 as a piece of tubing or heating chamber, and part 88 as a cooling device or chamber. The spray chamber 76 of Berndt thus can be seen to be linear, since a straight line may be drawn from nebulizer to spray chamber exit. Applicant's spray chamber, as defined in Claim 5b, is non-linear and may be allowed.

As can be learned from the patent of Berndt, the spray chamber 76 does not have any temperature control. Applicant's spray chamber, as defined in Claim 5c, has a different feature, (namely temperature control) and may be allowed.

Aside from not utilizing temperature control for the spray chamber, the device of Berndt requires at least two temperature zones, wherein Claim 5c describes a single temperature zone device, the elimination of complexity being highly patentable. Further, the device of Berndt utilizes 3 chambers (spray chamber, heating chamber, and cooling chamber), where applicant's device (Claim 5) is a single chamber.

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Remarks, continued

Neither is Claim 7 (rewritten from Claim 3) anticipated by Berndt. As previously discussed, Berndt does not apply either heating or cooling to the *spray chamber 76*. The peltier of Berndt is applied to a *second downstream stage 90*, not the spray chamber. Thus the device of Claim 7 represents a unique feature over Berndt (temperature control of the spray chamber itself via peltier) and may be allowed.

Applicants further submit that the device described by Claims 5 and 7 is not obvious to those skilled in the art. {35 U.S.C. 103(a)}. Applicants cite three legally relevant arguments in support of this.

1. Commercial Success
2. Professional Recognition
3. New Principle of Operation

Commercial Success: SoFTA Corporation now sells well in excess of 100 instruments per year. Each instrument is based on the aerosol splitter technology described by the claims of this patent application. Total sales dollars are approximately \$1,000,000.00 annually. An affidavit to this effect is included as Exhibit 1.

Professional Recognition: SoFTA Corporation introduced this technology at the largest trade show for the industry in March, 2004. (Pittsburgh Conference, or Pittcon) The Pittsburgh Conference recognized the novelty and usefulness of the technology by featuring an article in the show publication. A copy of this article is included as Exhibit 2. The article is not a paid advertisement, and SoFTA was in competition with literally hundreds of other new products for this professional mention.

New Principle of Operation: The reason for both commercial success and professional recognition is the new, novel, and useful operating principle described by this patent application. Never before has a smoothly variable aerosol splitter been offered in an ELSD. Previous offerings were either fixed at one split ratio, or constrained to full flow/full split operation. Completely variable splitting offers scientists a new way of tuning analytical instrumentation to laboratory needs.

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Remarks, continued

As Berndt teaches a device with two (and perhaps three) temperature zones (vs. one) and that lacks a non-linear spray chamber functioning as momentum separator, and that lacks any temperature control for the spray chamber itself, applicants submit that Claims 5 and 7 (rewritten from Claims 1 and 3) show novel features not anticipated in the cited prior art, and therefore may be allowed.

The Office Action rejects Claim 2 under 35 U.S.C. 103(a) as being unpatentable over Berndt in view of Ortiz et. al. *"Ortiz et al teach an aerosol generator comprising a vaporization tube made of stainless steel to withstand high heat from various heating means."*

Applicants submit that a Claimed Feature would be Lacking

Even if the suggested combination were made, insofar as the non-linear tube in the device of Berndt is **not a spray chamber**, making the tube from stainless steel as taught by Ortiz et al would not have the feature now more clearly stated in Claim 6, namely the ability to separate large and small aerosol droplets based upon their momentum (and thus upon their size).

The Office Action rejects Claim 4 under 35 U.S.C. 103(a) as being unpatentable over Berndt in view of Wittke. *"Wittke teaches a heating device for dispensers comprising heating plates 20 and 22. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have used in the device of Berndt heating plates as the heating means as taught by Wittke and sandwich the spray chamber with the plates to heat the spray chamber. The plates being made of aluminum would have been a matter of design choice since such a modification would have involved a mere change in a type of material which is generally recognized as being within the level of ordinary skill in the art."*

Applicants submit that Wittke is here being used as a Misunderstood Reference, that the Reference is from a Different Field (non-analogous art and cannot properly be combined), and that the described suggestion would be an Inoperable Combination.

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Remarks, continued

Misunderstood Reference: The heating device described by Wittke heats a gel or liquid (i.e. shaving cream or lotion) flowing between two plates, said plates having been raised in temperature by immersion in hot water or the like. Wittke does not teach any heating apparatus suitable for heating an aerosol directly, or for heating a structure (spray chamber) which contains an aerosol. The only aerosol mentioned by Wittke is the propellant present in pressurized cans of consumer products (i.e. shaving cream), said aerosol not being heated by the device described, and said pressurized can not being heated by the device described. Rather, the invention of Wittke heats whatever fluid the aerosol pushes out.

Neither can the flat plates of Wittke serve as an effective interface between the flat peltier, and the tubular spray chamber. The peltier is already present as a flat plate, thus the extra flat plates of Wittke add nothing new.

Reference from a Different Field: The device of Wittke is from the field of consumer products, making it nonanalogous art. As the product was not commercially successful, there is little reason to believe that a person skilled in the art of analytical instrumentation would suggest the combination, and the combination is in no way suggested by either reference individually.

Inoperative Combination: The heat transferring Aluminum plates of Claim 8 tightly surround the spray chamber, and have a flat surface to mate with the flat peltier. Thus, thermal energy can be efficiently transferred between the two parts of the described aerosol splitter. Applicants submit that the flat Aluminum plates of Wittke would make inadequate thermal contact with the spray chamber, thus resulting in a non-functioning aerosol splitter.

Applicants submit that because **Berndt in view of Ortiz et al** would lack a claimed feature, Claim 6 may be allowed. Applicants further submit that **Berndt in view of Wittke** employs a **misunderstood reference** concerning what Wittke teaches, that said reference is **from a different field**, and that the proposed combination would be inoperative. Thus Claim 8 may be allowed.

Conclusion

For all the reasons stated above, applicants submit that the claims are now in proper form, and that the claims all define patentably over the cited prior art. Therefore they submit that this application is now in condition for allowance, which action they respectfully solicit.